MASTITIS IN DAIRY COWS

A FOOD QUALITY AND SAFETY PERSPECTIVE

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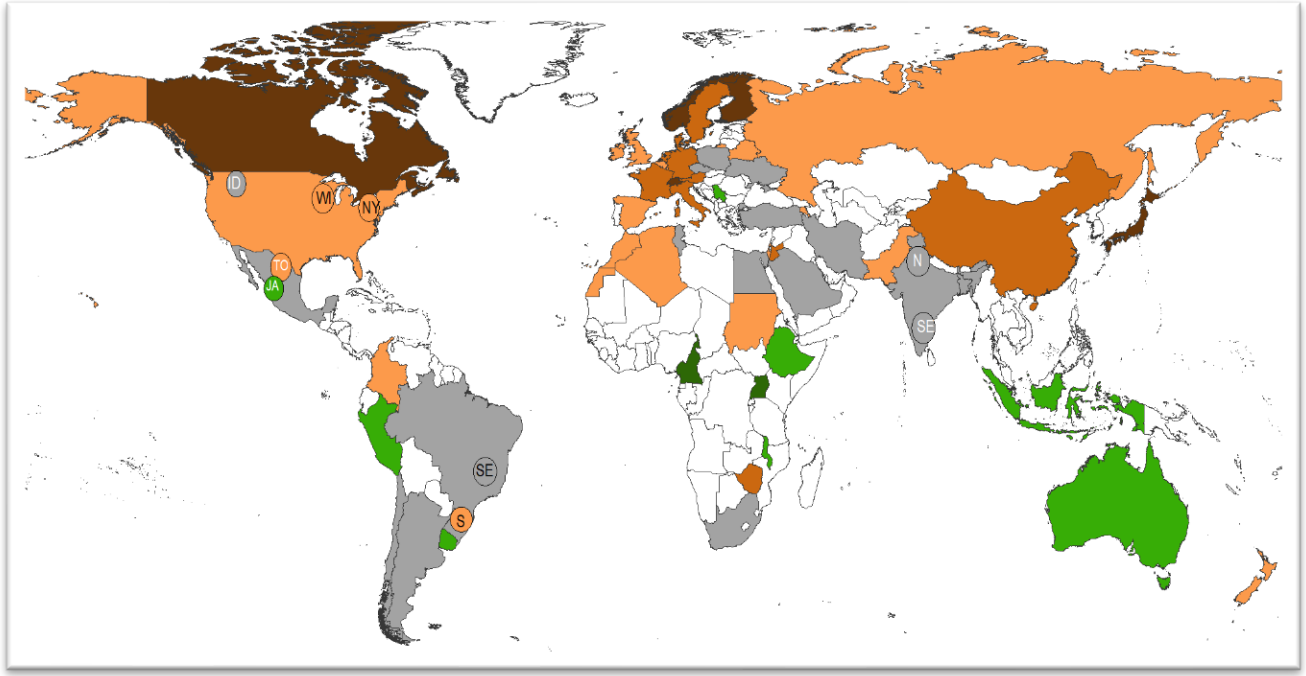
Dairying: SA vs. the World



Cost of milk production (2014)

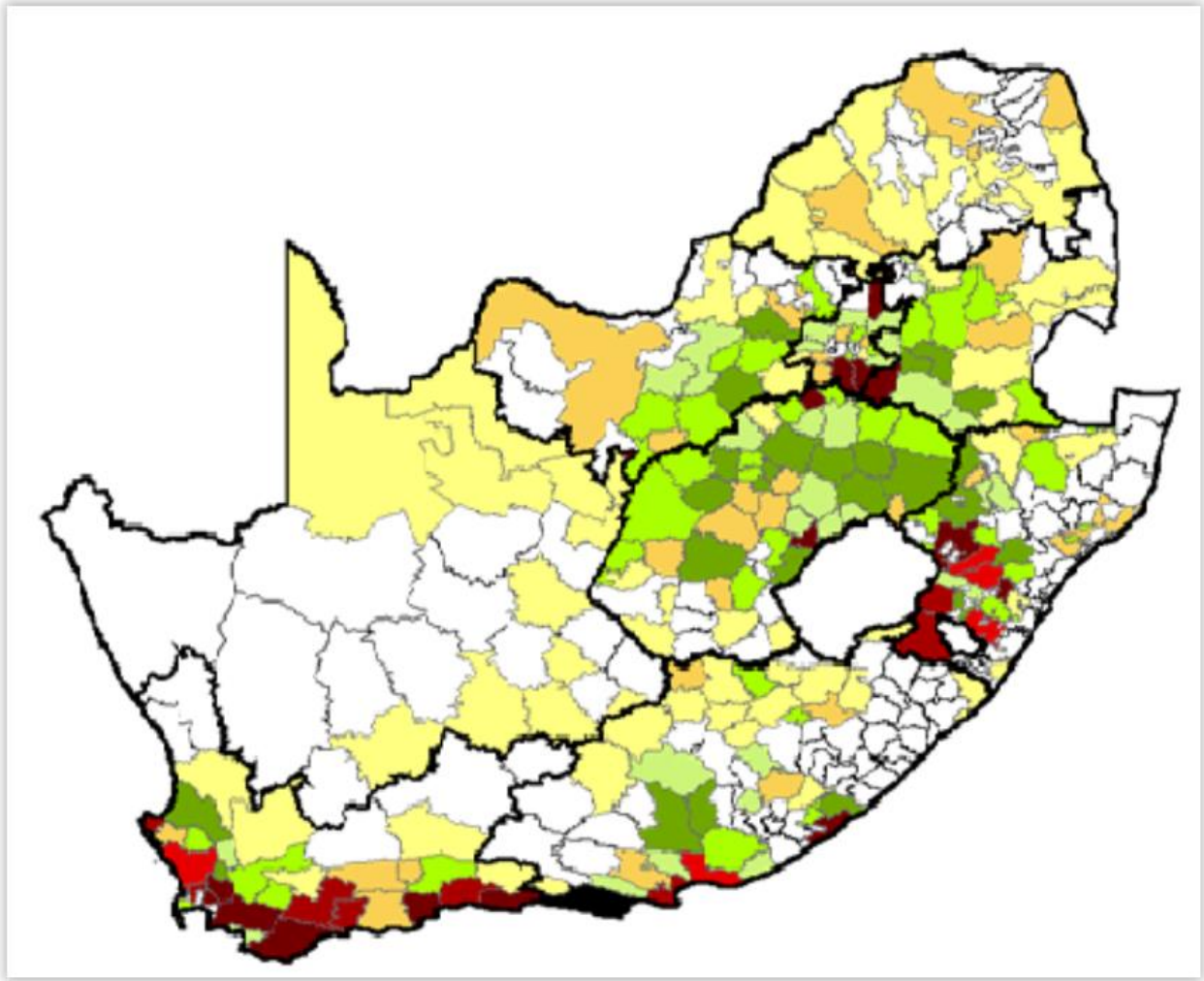
		>	60
	50	< =	60
	40	< =	50
	30	< =	40
	20	< =	30
	0	< =	20
		no data	

Parameter	South Africa
Position in world	38
Milk production	3,44 mill t
% of World production	0,55%
Lactating Cows	617,000
Milk yield/cow t	5,57
Population	59,96 mill
Kg/capita ME	59,9
Milk price as % of world price	0,8% below

J. S. Afr. vet. med. Ass. 38 (2) 1967

THE MASTITIS PROBLEM IN SOUTH AFRICA—SOME OBSERVATIONS

L.W. VAN DEN HEEVER* AND W. H. GIESECKE**.



In addition to the obvious necessity of eradicating tuberculosis and brucellosis, the problem of combating inflammation of the mammary gland in cows in South Africa has long been well-known. To date little has been done to achieve this realization in spite of the knowledge which exists throughout the world[1-31] and also in South Africa[32-35], regarding the importance of the healthy milk gland for the economical production of milk on the producer's farm. Healthy milk can only be produced by healthy cows and the quality of milk for liquid consumption as well as manufacturing purposes is dependant on the hygienic production and handling of farm milk.

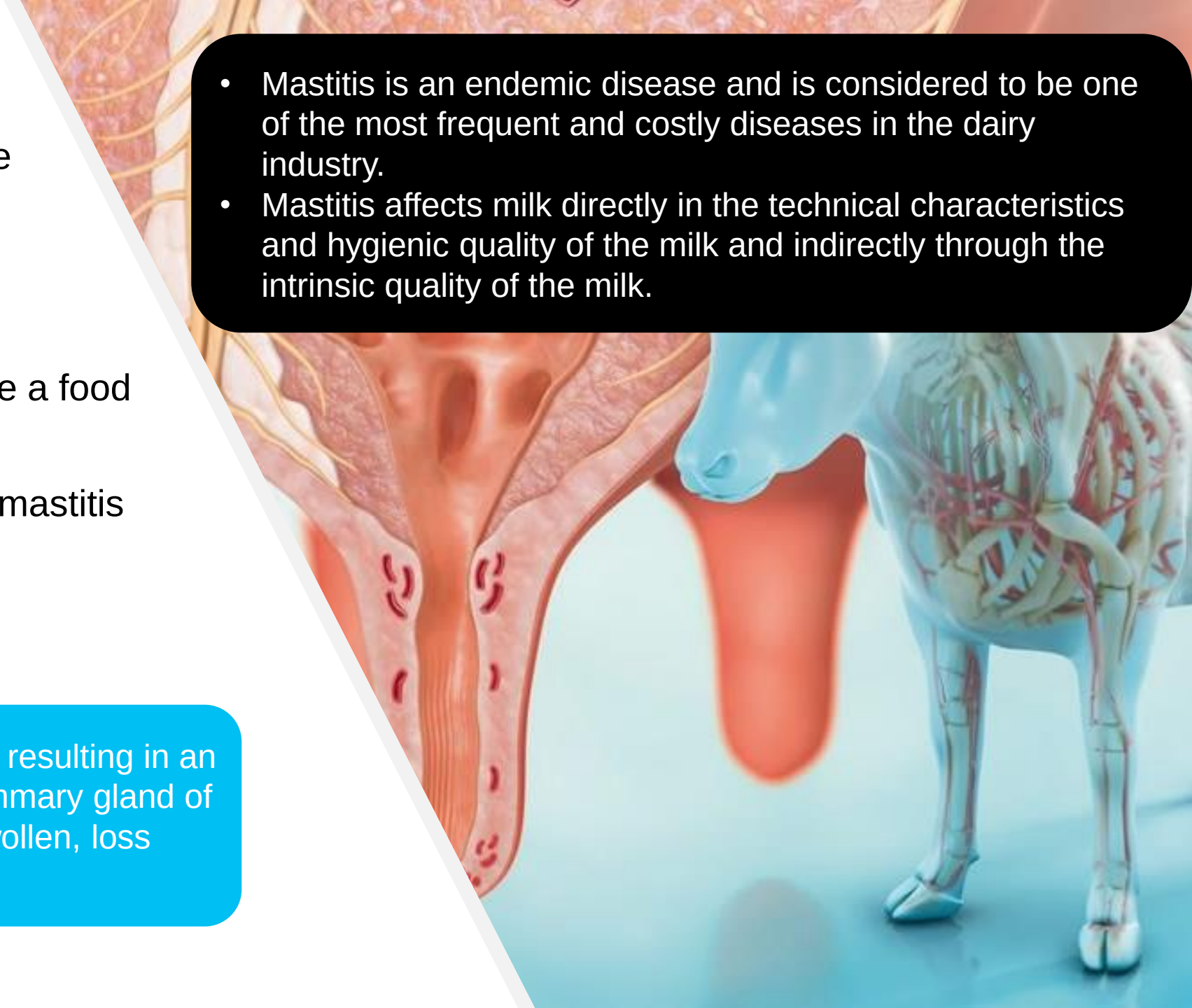
Trends in Udder Health and emerging mastitogenic pathogens in SA Herds
Petzer et al JSAVA 2009 80(1) 17-22

- Mastitogenic pathogens isolated has changed over time
- Situations that created new opportunities for udder pathogens under SA conditions include
  - Milking routine
  - Milking machine maintenance
  - Increase in herd size
  - Introductions of many new cows in expanding herds
  - Increased milk yield

- Mastitis is an animal welfare problem.
- In addition, mastitis might be a food safety problem, but clearly, mastitis is an economic problem

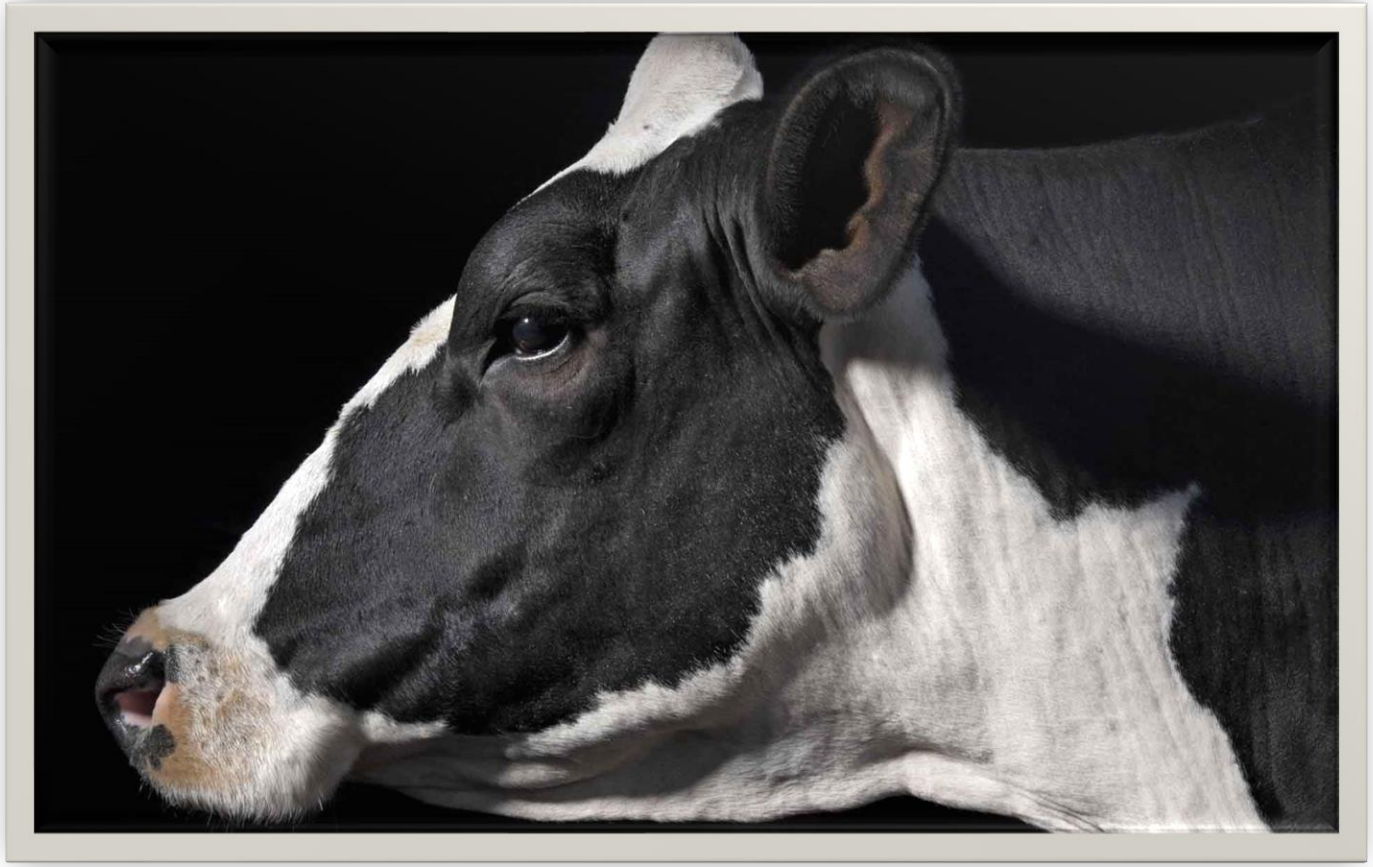
Mastitis is an infectious condition resulting in an inflammatory reaction in the mammary gland of the cow (red, hot, painful, swollen, loss function)

- Mastitis is an endemic disease and is considered to be one of the most frequent and costly diseases in the dairy industry.
- Mastitis affects milk directly in the technical characteristics and hygienic quality of the milk and indirectly through the intrinsic quality of the milk.



Consequences of mastitis

- Milk production losses
- Drugs
- Discarded milk
- Veterinary services
- Labour
- Product quality
- Materials and investments
- Diagnostics
- Other diseases
- Culling



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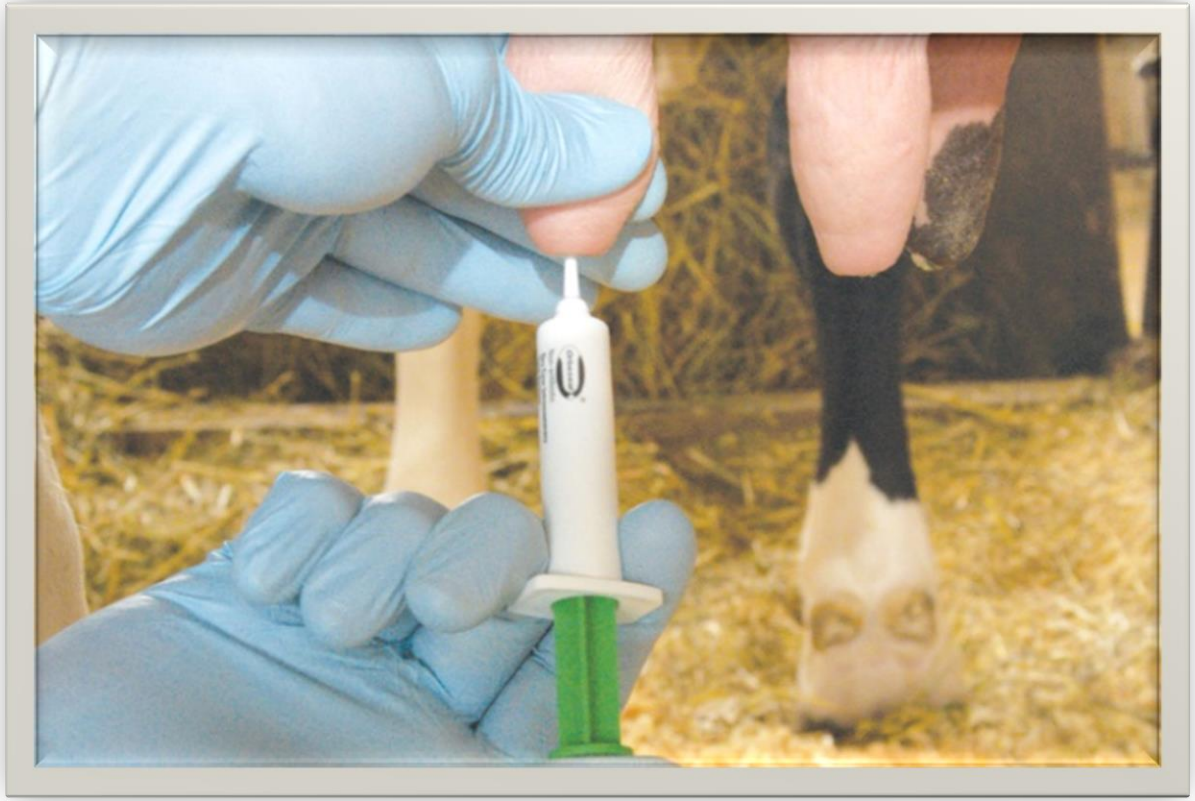

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- Although the economic damage due to discarded milk can be compared with that from decreased milk production
- It is actually higher as the discarded milk was produced by a cow that was fed, decreasing the income over feed cost

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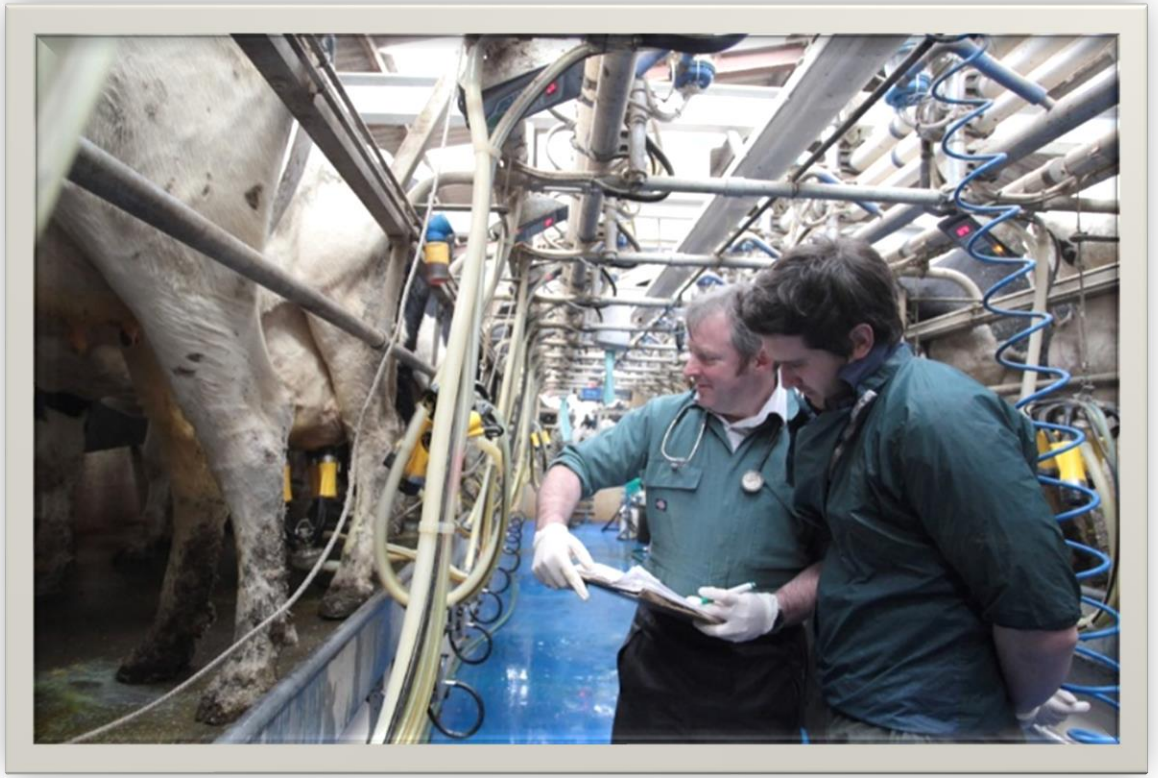

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	Normal	Mastitis
Solid-not-fat	8.98	8.8
Fat	3.50	3.20
Lactose	4.90	4.40
Total protein	3.61	3.56
Total casein	2.80	2.30
Whey protein	0.80	1.30
Serum albumin	0.02	0.07
Lactoferrin	0.02	0.10
Immunoglobulins	0.10	0.60
Sodium	0.06	0.105
Chloride	0.09	0.147
Potassium	0.17	0.157
Calcium	0.12	0.04

Mustafa 2003

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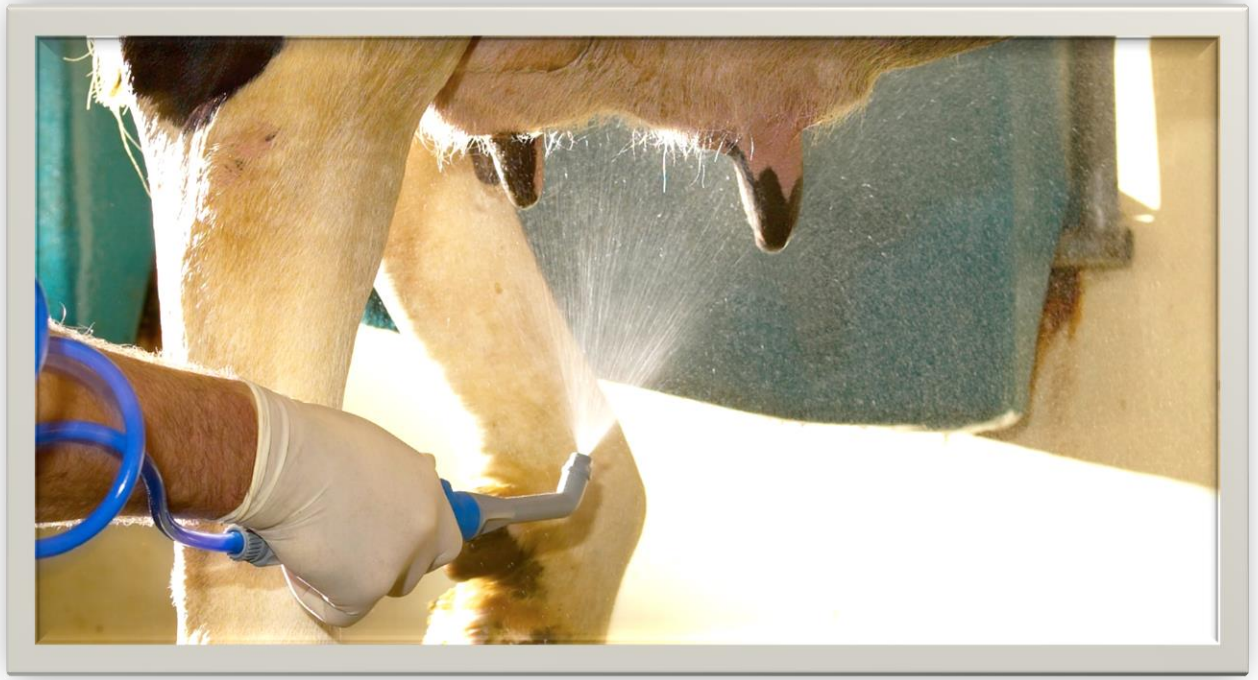

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- Although cows with mastitis have a higher risk to be culled, economic losses with culling is a difficult factor to estimate since it may be a result of other effects as well.
- The cost of premature replacement of animals due to mastitis is one of the largest areas of economic loss.
  - When a cow is culled we have direct costs namely the cost of rearing or buying a replacement animal (usually a heifer).
  - Indirect costs are a decreased efficiency of milk production.
- There is however returns in culling a cow namely the price of the meat that should be considered.

What is Somatic Cells?

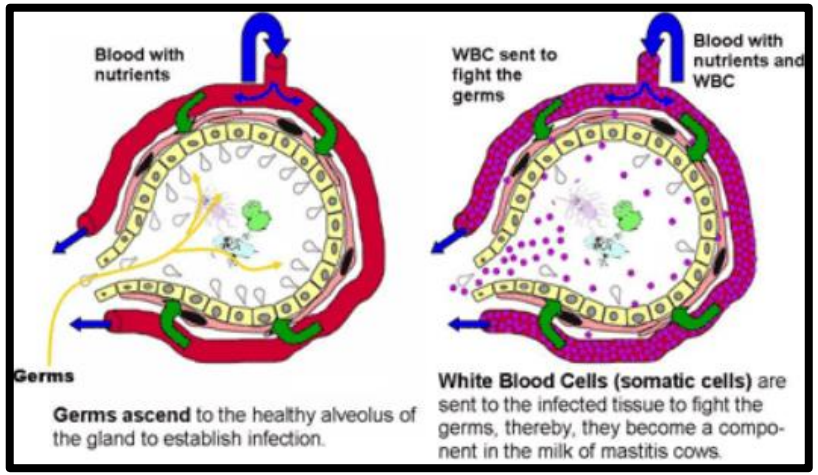
- Summary values in the literature for losses of milk production were proposed at 375 kg per clinical case at lactation level and 0,5 kg per 2-fold increase of crude SCC of a cow.
- A cow with one case of clinical mastitis during her lactation producing 8000 kg of milk can therefore loose between 40 and 360 kg of milk.
- This equates to R180,00 and R1620,00 per clinical mastitis case at a milk price of R4,50 per kg.

SCC (*1000 cells per ml)	% LOSS in MILK due to an elevated SCC
0 – 250	0
251- 400	6
401 – 700	10
701 – 1000	16
>1000	25

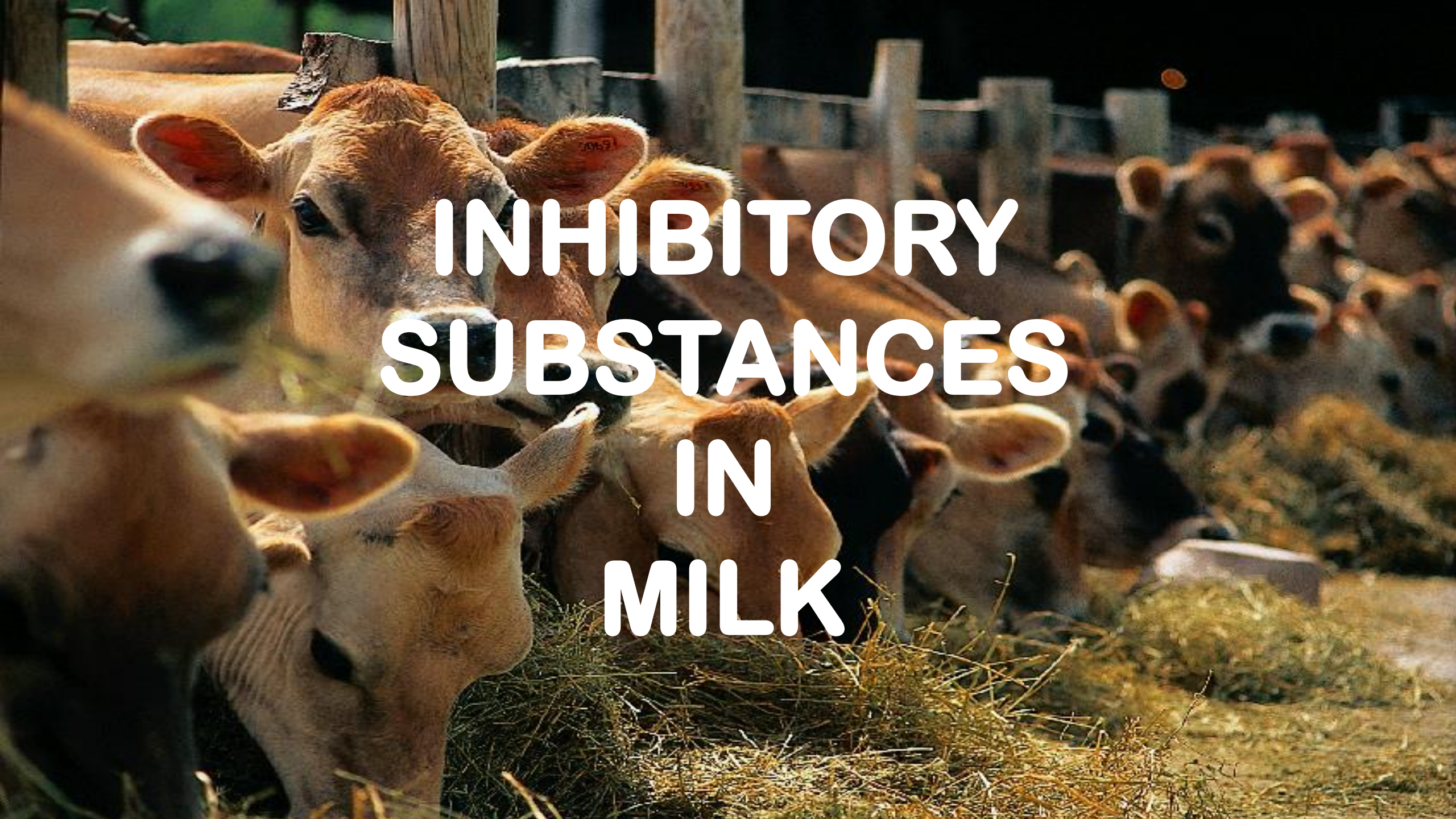
- Philpot

Somatic Cells and Somatic Cell Count and Mastitis

- Somatic cells are leukocytes and other blood cells
- All normal milk contains some somatic cells
- Goal of the dairy herd should be an average of no more than 150,000-200,000 cells per milliliter
- 90% of the herd should be below 200,000 cells per milliliter
- Somatic cell count can vary greatly from month to month in cows that have mastitis infection

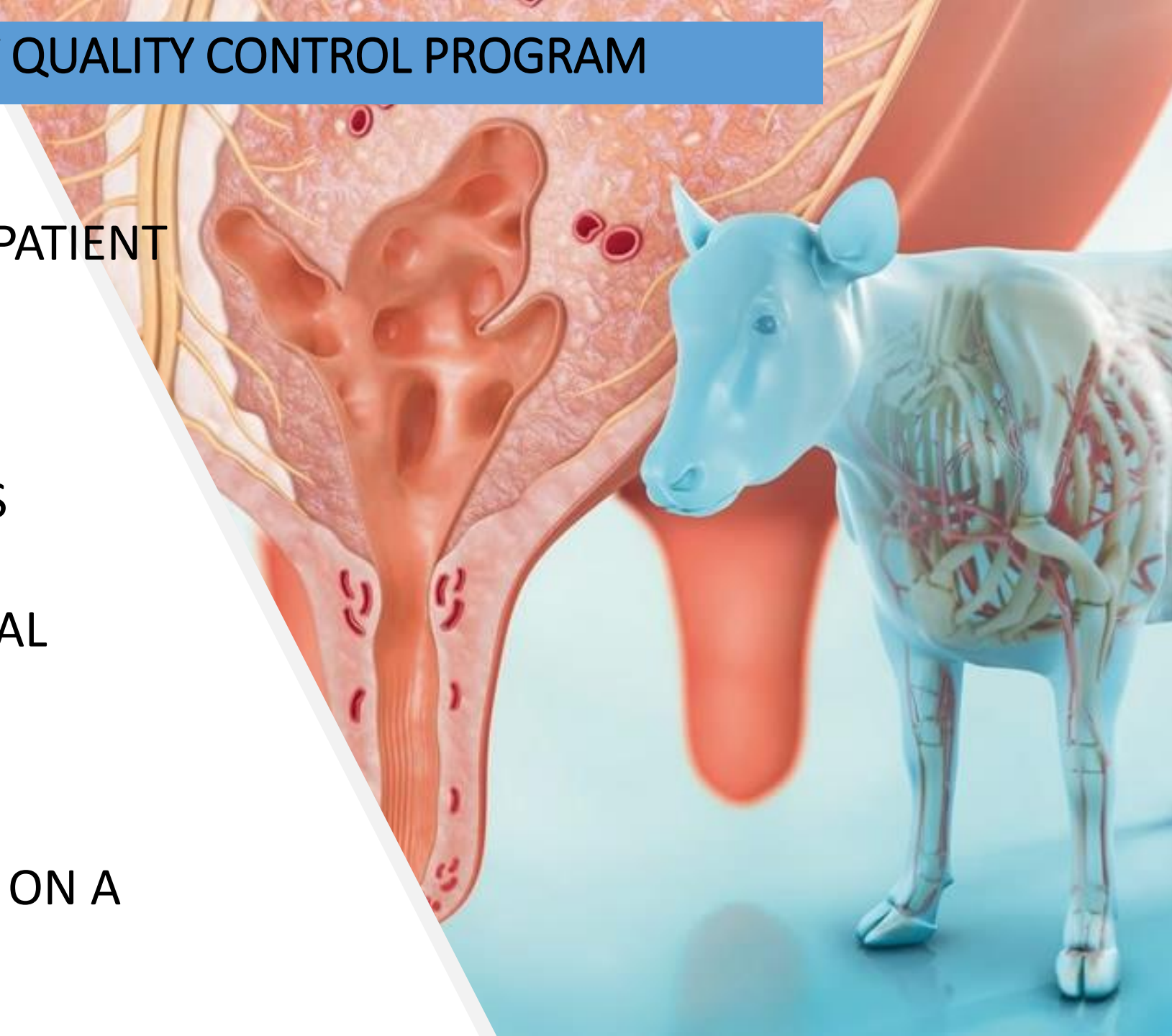


- WHAT DOES THE END USER EXPECT FROM THE PRODUCT
  - Wholesome milk
  - Highest quality
  - Safe for the end-user
    - Free from inhibitory substances
      - Antibiotics
      - Soaps and detergents
      - Hormones


INHIBITORY
SUBSTANCES
IN
MILK

10 POINT QUALITY CONTROL PROGRAM

1. HERD HEALTH
2. VETERINARIAN-CLIENT-PATIENT RELATIONSHIP
3. REGISTERED PRODUCTS
4. CORRECT LABELLING
5. STORAGE OF PRODUCTS
6. ADMINISTRATION
7. RECORDS – WITHDRAWAL
8. TEST FOR RESIDUES
9. INVOLVEMENT OF ALL ROLEPLAYERS
10. REVIEW THE PROGRAM ON A YEARLY BASIS




QUESTIONS